Space Weather Forecast

Issued on Friday, 14 July 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: M-flares likely (R1-R2 Blackouts). Chance of Minor Storms today (14 Jul).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Has been Moderate with a Moderate class flare from AR3372 in the northeast disc at 13/1920 UTC, which has some magnetic complexity apparent in its complex trailer spot. Two other regions are magnetically complex. both in the southwest quadrant; AR3363 is a large and more mature spot and consequently much less active. Meanwhile AR3367, despite being smaller, has developed over the past 24 hours to gain the magnetic complexity. The other regions are generally smaller, simpler and either stable or decaying, with a total of eight regions on the disc. No Earth-directed CMEs (coronal mass ejections) was seen leaving the Sun from AR3361 around 13/1830 UTC, and is yet to be analysed but is unlikely to be Earth directed.
Solar Wind / Geomagnetic Activity: A CME arrival occurred at 13/1550 UTC, this most likely the CME from the 10th. However this CME was weak, and so the solar wind remained at background levels, peaking at 363 at 13/2223 UTC. The strength of the magnetic field strength was initially weak then increased to moderate levels. The north-south component was weakly negative (southward) or positive until the CME arrived, then fluctuated to become weakly negative at times. Geomagnetic activity has been Quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed with the count rate of energetic particles (high energy protons) at background.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to Low activity expected, with an ongoing likelihood of Moderate class fares and a slight chance of isolated Strong class flares.

Solar Wind / Geomagnetic Activity: A glancing CME arrival is possible around 14/1600 UTC, although the bulk of this CME is expected to miss. Earth is also likely to connect to the elevated wind from a small coronal hole feature this morning (14 Jul), although probably only increasing to slightly elevated levels. Initial Quiet conditions are likely to become Unsettled to Active, with a chance of Minor Storm intervals today, especially if the CME arrives. Activity then eases tomorrow onwards to becoming mainly Quiet, with isolated Unsettled intervals.
Energetic Particles / Solar Radiation: Solar radiation has a slight chance of reaching the S1/Minor Storm threshold through the period, should a larger flare occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	10	1	1
Strong	G3	No	5	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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